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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,637	06/25/2003	Balaji Venkateshwaran	42.P16442	5015

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EXAMINER
HUGHES, DEANDRA M

ART UNIT	PAPER NUMBER
3663	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/606,637	VENKATESHWARAN ET AL.	
	Examiner	Art Unit	
	Deandra M. Hughes	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 10/11/05 have been fully considered but they are not persuasive. Applicant argues:

(A) "Greywall is not concerned with thermal tuning." (pg. 6, line 9).

(B) For the sake of argument, even if Greywall is concerned with thermal tuning, "Greywall fails to teach the single-crystal silicon active region doped to make it electrically conductive in order to ***thermally tune*** the signal crystal active region ***to pass a specific wavelength*** in response to the received optical signal." (pg. 9, lines 14-16)

(C) "Chraplyvy is not concerned with, and the Examiner does not assert that Chraplyvy teaches or suggests thermal tuning." (pg. 9, 2nd paragraph).

With regard to the apparatus claims 1-16 and 20-23, the argument (A) is not persuasive because a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The prior art structure applies a current via #408 in fig. 4A. It is a well-known inherent principle that current creates heat (e.g., see the US 2002/0090011 paragraph [0007] which is relied upon to merely demonstrate the inherency of the use of electrical current for thermal tuning). Consequently, the prior art structure is capable of performing the intended use, i.e. thermal tuning.

With regard to the method claims 17-19, argument (A) is not convincing because Greywall thermally tunes by applying a current via fig. 4A, #408. Again, thermal tuning via current injection is inherent.

With regard to the apparatus claims 1-16 and 20-23, Argument (B) is not convincing because 'to pass a specific wavelength' is intended use. See response to Argument (A) above. Further, tuning a laser cavity is the method by which one chooses to pass a specific wavelength. This is an inherent operating principle of all lasers (e.g. see Silvast, Laser Fundamentals pg. 478, line 1-3 under the Tunable Cavity section; Silvast is relied upon to merely demonstrate the inherency of this principle). Consequently, the prior art structure is capable of passing a specific wavelength in response to the received optical signal.

With regard to the method claims 17-19, argument (B) is not convincing because tuning a laser cavity is the method by which one chooses to select a specific wavelength. This is an inherent operating principle of all lasers (e.g. see Silvast, Laser Fundamentals pg. 478, line 1-3 under the Tunable Cavity section; Silvast is relied upon to merely demonstrate the inherency of this principle).

With regard to argument (C), the argument is not convincing because, as applicant clearly states, "...the Examiner does not assert that Chraplyvy teaches or suggests thermal tuning." (pg. 9, 2nd paragraph of applicant's remarks). The Examiner asserted and maintains the position that Greywall discloses thermal tuning. Chraplyvy is relied upon to teach tunable lasers coupled to Booster EDFAs. Consequnetly, applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly

point out the patentable novelty which he thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 7-8, 12-13, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Greywall (US 6,356,689 published Mar. 12, 2002).

**The references to the prior art made herein are done so for the convenience of the applicant. They are in no way intended to be limiting. The prior art should be considered in its entirety.

With regard to claims 1 and 8, Greywall discloses an apparatus (figs. 4A-4C) comprising:

- a single-crystal silicon active region (fig. 4B, #206A; col. 4, lines 50-55: 'single crystal SOI wafers') fully or partially transparent to an optical signal;
- a bulk silicon inactive region (fig. 4B, #202A; col. 4, lines 55-60);
- and a membrane (fig. 4B, #204A is a SiO_2 layer; col. 4, lines 60-65) coupling the single-crystal silicon active region (col. 10, lines 60-68) to the bulk silicon inactive region;
- the single-crystal silicon active region doped to make it electrically conductive (col. 10, lines 60-68) in order to thermally tune the single-

crystal silicon active region to pass a specific wavelength in response to the received optical signal.

With regard to claims 12-13, fig. 4A, #408 discloses the bond pad.

With regard to claim 7, silicon nitride as a membrane layer is disclosed (col. 2, line 38).

With regard to claim 17, Greywall discloses an apparatus that operates according to the following method:

- adjusting resistivity of a doped silicon etalon (figs. 4A-4C; the growth methods disclosed in fig. 3 varies the resistivity);
- applying a current (via fig. 4A, #408) to thermally tune the doped silicon etalon to select a wavelength in response to a signal.

Claim Rejections - 35 USC § 103

4. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greywall (US 6,356,689 published Mar. 12, 2002) in view of Neustroev et al. (Hundred MEV Ion Irradiation Effect on Dopant Depth Profiles in Silicon, 1998).

Greywall does not specifically disclose the type of dopant used in the single-crystal active region. However, Neustroev teaches the claimed silicon crystal dopants (entire article). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to dope the silicon with the claimed dopants for the advantage of optimizing the apparatus for various electronic device applications, as is taught by Neustroev (pg. 641, col. 1, lines 4-5).

5. Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Greywall (US 6,356,689 published Mar. 12, 2002) in view of Jeung (US 6,787,894 published Oct. 30, 2002).

Greywall does not specifically disclose the use of gold bond pads. However, Jeung teaches the use of gold bond pads (col. 1, line 59). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to use gold bond pads for the advantage of increased conductivity.

6. Claims 9-10 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greywall (US 6,356,689 published Mar. 12, 2002) in view of Kurihara (US 2002/0155619 filed Apr. 22, 2002).

Greywall does not specifically disclose a platinum temperature sensor in his appratus. However, Kurihara teaches the use of a platinum temperature sensor (paragraph [0071]). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to use a platinum temperature sensor for the advantage of temperature control.

7. Claims 14-16 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greywall (US 6,356,689 published Mar. 12, 2002) in view of Chraplyvy (US 5,907,420 published May 25, 1999).

With regard to claims 14 and 20-23, Greywall does not specifically disclose a transponder and an EDFA coupled to the his wavelength selective apparatus. However, Chraplyvy teaches tunable lasers (i.e., transponders) coupled to Booster EDFAs (fig. 2). It would have been obvious to one of ordinary skill in the art (e.g., an

optical engineer) to coupled wavelength tunable transponders to an EDFA for the advantage of controlling the channels in an optical transmission system.

With regard to claims 15-16, Greywall does not specifically disclose an add/drop multiplexer. However, Chraplyvy teaches add/drop multiplexers coupled to the EDFA (fig. 2; circulator). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to couple an add/drop multiplexer for the advantage of changing the number of channels in an optical transmission system.

Claim Objections

8. In view of applicant's amendments correcting the minor informalities of claims 1 and 10, the claim objections are withdrawn.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M. Hughes whose telephone number is 571-272-6982. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Deandra M Hughes
Examiner
Art Unit 3663